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(54) **SYSTEM AND METHOD FOR DYNAMICALLY ESTIMATING ACTIVE POWER CAPABILITY OF AN INVERTER-BASED RESOURCE**

(57) A method for controlling an inverter-based resource (IBR) having a power converter and a generator connected to an electrical grid includes determining an available active power of the electrical grid. The method also includes determining an available active power of the IBR based on an effect of a speed and a rating of the generator. Further, the method includes determining a minimum available active power based on the available active power of the electrical grid and the available active power of the IBR. Moreover, the method includes determining an active power limit change for the IBR based on one or more thermal margins of the IBR. In addition, the method includes determining an active power estimation as a function of the minimum available active power and the active power limit change. The method further includes providing the active power estimation to a supervisory controller for controlling the IBR.

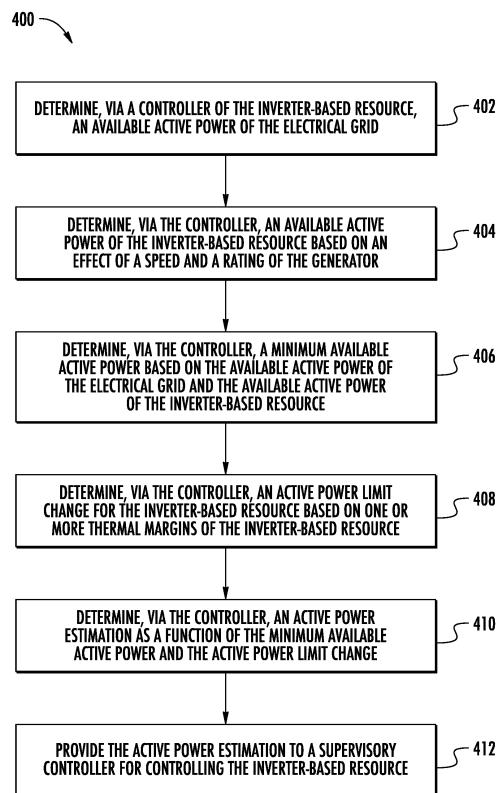


FIG. 7



EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
10	A US 2010/145533 A1 (CARDINAL MARK EDWARD [US] ET AL) 10 June 2010 (2010-06-10) * abstract * * figures 1,5 * * paragraph [0035] * * paragraph [0041] - paragraph [0045] * -----	1-15	INV. H02J3/48 H02J3/50 F03D7/04
15	A WO 2019/199806 A1 (MERIT SI LLC [US]) 17 October 2019 (2019-10-17) * abstract * * paragraph [0026] - paragraph [0039] * * paragraph [0053] * * figures 4-8 * -----	1-15	ADD. H02M1/32
20	A US 2008/252076 A1 (FORTMANN JENS [DE] ET AL) 16 October 2008 (2008-10-16) * the whole document * -----	1-15	
25	A EP 1 919 076 A2 (GEN ELECTRIC [US]) 7 May 2008 (2008-05-07) * the whole document * -----	1-15	
30	A US 2016/226252 A1 (KRAVTIZ ARNOLD [US] ET AL) 4 August 2016 (2016-08-04) * abstract * * figures 1,18 * * paragraph [0039] * * claims 1,5, 8 * -----	1-15	H02J H02M
35	A US 2013/076327 A1 (WAGONER ROBERT GREGORY [US] ET AL) 28 March 2013 (2013-03-28) * abstract * * figures * * paragraph [0012] * * claims 1,5,10,11,13,14,16,17 * -----	1-15	
40			
45			
50	1 The present search report has been drawn up for all claims		
55	Place of search Munich	Date of completion of the search 27 March 2023	Examiner Hurtado-Albir, F
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ON EUROPEAN PATENT APPLICATION NO.

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

27-03-2023

10	Patent document cited in search report	Publication date		Patent family member(s)	Publication date
15	US 2010145533 A1	10-06-2010	AU	2010233046 A1	12-05-2011
			CN	102097827 A	15-06-2011
			EP	2315330 A2	27-04-2011
			ES	2804759 T3	09-02-2021
			PT	2315330 T	26-06-2020
			US	2010145533 A1	10-06-2010
20	WO 2019199806 A1	17-10-2019	US	2021367429 A1	25-11-2021
			WO	2019199806 A1	17-10-2019
25	US 2008252076 A1	16-10-2008	AT	487879 T	15-11-2010
			CN	1886593 A	27-12-2006
			DE	10344392 A1	02-06-2005
			DK	1668245 T3	28-02-2011
			EP	1668245 A2	14-06-2006
			ES	2354158 T3	10-03-2011
			US	2008252076 A1	16-10-2008
			WO	2005031160 A2	07-04-2005
30	EP 1919076 A2	07-05-2008	EP	1919076 A2	07-05-2008
			ES	2344365 T3	25-08-2010
			US	2008106098 A1	08-05-2008
35	US 2016226252 A1	04-08-2016	CA	2975601 A1	11-08-2016
			GB	2550818 A	29-11-2017
			US	2016226252 A1	04-08-2016
			WO	2016126636 A1	11-08-2016
40	US 2013076327 A1	28-03-2013	CN	103828207 A	28-05-2014
			DK	2761733 T3	03-08-2020
			EP	2761733 A2	06-08-2014
			ES	2808338 T3	26-02-2021
			JP	6457812 B2	23-01-2019
			JP	2014526879 A	06-10-2014
			US	2013076327 A1	28-03-2013
45			WO	2013049425 A2	04-04-2013
50					
55					